7. LAMPIRAN

Lampiran 1. Syarat Mutu Es Krim (SNI 01-3713-1995)

No	Kriteria Uji	Satuan	Persyaratan
1	Keadaan:		
	Penampakan	-	Normal
	Bau	-	Normal
	Ras	-	Normal
2	Lemak	% b/b	Minimum 5,0
3	Gula dihitung sebagai sukrosa	% b/b	Minimum 8,0
4	Protein	% b/b	Minimum 2,,7
5	Jumlah Padatan	% b/b	Minimum 3,4
6	Bahan tambahan makanan:		
	Pewarna tambahan	-	Negatif
	Pemanis buatan	-	
	Pemantap dan pengemulsi	-	
7	Cemaran Logam:		
	Timbal (Pb)	mg/kg	Maksimum 1,0
	Tembaga (Cu)	mg/kg	Maksimum 20,0
8	Cemaran arsen (As)	mg/kg	Maksimum 0,5
9	Cemaran mikroba:		
	Angka lempeng total	Koloni/g	Maksimum 2,0 x 10^5
	MPN Coliform	APM/g	< 3
	Salmonella	Koloni/25 g	Negative
	Listeria SPP	Koloni/25 g	Negative

(Sumber : BSN, 1995)

Lampiran 2. Hasil Analisis Fisik dan Kimia Es Krim *Wall's* Berdasarkan Uji Laboratorium

Analisis Fisik dan Kimia	Sampel Es Krim *Wall's*
Total Padatan (%)	38,03±0,05
Kadar Air (%)	61,97±0,05
Kadar Lemak (%)	5,15±0,80
Kadar Protein (%)	4,10±0,35
Kadar Abu (%)	0,22±0,01
Kadar Karbohidrat (%)	28,56±1,05
Kadar Sukrosa (%)	27,65±2,29
Kadar Antioksidan (%)	0,35±0,05
Overrun (%)	81,80±1,27
Kecepatan Meleleh (menit)	17,36±0,11
L	88,03±0,59
a*	-2,79±0,14
b*	21,85±1,39

Keterangan:

- Seluruh data disajikan dalam rata-rata ± standar deviasi

Lampiran 3. *Scoresheet* Sensori

UJI RANKING HEDONIK

Es Krim Kolang Kaling

No. : _____ Tanggal : _____

Nama : _____ Id line : _____

Dihadapan Anda tersedia 5 sampel es krim dengan kode yang berbeda. Anda diminta untuk mencicipi sampel tersebut secara berurutan dari kiri ke kanan. Saat mencicipi sampel, biarkan es krim meleleh dengan sendirinya di dalam mulut Anda. Bilaslah mulut Anda dengan cara berkumur menggunakan air mineral yang telah disediakan untuk menetralkan rasa sebelum mencicipi sampel dan setiap akan berganti pada sampel selanjutnya. Kemudian Anda diminta untuk memberikan skor terhadap **rasa, warna, tekstur, aroma, dan keseluruhan (*overall*)** kepada masing-masing sampel dengan menggunakan skala sebagai berikut:

1: sangat suka, 2: suka, 3: netral, 4: tidak suka, 5: sangat tidak suka

Penilaian antara 1 sampel dengan sampel lainnya **TIDAK BOLEH SAMA.**

	Kode Sampel				
Rasa					
Warna					
Tekstur					
Aroma					
Overall					

- TERIMA KASIH -

Lampiran 4. Dokumentasi Sensori

Gambar 4. Panelis Saat Melakukan Sensori

Lampiran 5. Data SPSS

7.5.1. Analisis Kimia: Uji Normalitas dan Homogenitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sampel	Statistic	df	Sig.	Statistic	df	Sig.
Total_Padatan	1	.252	4	.	.887	4	.371
	2	.193	4	.	.976	4	.877
	3	.302	4	.	.819	4	.141
	4	.233	4	.	.945	4	.687
Air	1	.252	4	.	.887	4	.371
	2	.193	4	.	.976	4	.877
	3	.285	4	.	.877	4	.324
	4	.233	4	.	.945	4	.687
Lemak	1	.250	4	.	.962	4	.790
	2	.145	4	.	.997	4	.989
	3	.274	4	.	.943	4	.676
	4	.252	4	.	.925	4	.566
Protein	1	.250	4	.	.952	4	.731
	2	.219	4	.	.959	4	.770
	3	.257	4	.	.896	4	.413
	4	.315	4	.	.788	4	.082
Abu	1	.268	4	.	.926	4	.571
	2	.255	4	.	.932	4	.606
	3	.314	4	.	.854	4	.240
	4	.261	4	.	.933	4	.615
Karbohidrat	1	.250	4	.	.957	4	.759
	2	.266	4	.	.896	4	.411
	3	.288	4	.	.841	4	.198
	4	.283	4	.	.879	4	.334
Sukrosa	1	.305	4	.	.789	4	.084
	2	.303	4	.	.818	4	.138
	3	.172	4	.	.992	4	.968
	4	.214	4	.	.963	4	.798
Antioksidan	1	.285	4	.	.811	4	.123
	2	.181	4	.	.983	4	.921
	3	.271	4	.	.893	4	.399
	4	.260	4	.	.904	4	.449

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Total_Padatan	28.169	3	12	.000
Air	4.068	3	12	.033
Lemak	.020	3	12	.996
Protein	1.480	3	12	.270
Abu	2.177	3	12	.144
Karbohidrat	2.176	3	12	.144
Sukrosa	5.027	3	12	.017
Antioksidan	1.942	3	12	.177

7.5.2. Analisis Kimia: Uji *One Way* ANOVA & Uji Post Hoc (*Duncan*)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Total_Padatan	Between Groups	5.511	3	1.837	28.206	.000
	Within Groups	.782	12	.065		
	Total	6.293	15			
Air	Between Groups	5.832	3	1.944	30.430	.000
	Within Groups	.767	12	.064		
	Total	6.598	15			
Lemak	Between Groups	4.110	3	1.370	23.980	.000
	Within Groups	.686	12	.057		
	Total	4.796	15			
Protein	Between Groups	1.527	3	.509	9.190	.002
	Within Groups	.665	12	.055		
	Total	2.192	15			
Abu	Between Groups	.004	3	.001	1.861	.190
	Within Groups	.009	12	.001		
	Total	.013	15			
Karbohidrat	Between Groups	14.218	3	4.739	41.091	.000
	Within Groups	1.384	12	.115		
	Total	15.602	15			
Sukrosa	Between Groups	1639.334	3	546.445	550.874	.000
	Within Groups	11.904	12	.992		
	Total	1651.238	15			
Antioksidan	Between Groups	214.959	3	71.653	646.398	.000
	Within Groups	1.330	12	.111		
	Total	216.289	15			

Total_Padatan

Duncan[a]

Sampel	N	Subset for alpha = 0.05		
		1	2	3
4	4	34.79800		
3	4		35.56350	
2	4		35.70675	
1	4			36.45175
Sig.		1.000	.443	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Lemak

Duncan[a]

Sampel	N	Subset for alpha = 0.05	
		1	2
4	4	11.42250	
2	4	11.44925	
1	4	11.71325	
3	4		12.66900
Sig.		.127	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Air

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
1	4	63.54825			
2	4		64.29325		
3	4			64.68650	
4	4				65.20200
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Protein

Duncan[a]

Sampel	N	Subset for alpha = 0.05		
		1	2	3
2	4	4.42175		
1	4	4.69100	4.69100	
3	4		4.87725	
4	4			5.27100
Sig.		.132	.285	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Abu

Duncan[a]

Sampel	N	Subset for alpha = 0.05
		1
3	4	.11850
2	4	.12350
4	4	.13700
1	4	.15925
Sig.		.068

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Karbohidrat

Duncan[a]

Sampel	N	Subset for alpha = 0.05	
		1	2
3	4	17.87975	
4	4	17.96000	
2	4		19.71250
1	4		19.88800
Sig.		.744	.479

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Sukrosa

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
1	4	34.69875			
2	4		46.46700		
3	4			53.64250	
4	4				62.32900
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Antioksidan

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
1	4	3.423750			
2	4		7.630250		
3	4			9.427500	
4	4				13.634000
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

7.5.3. Analisis Fisik: Uji Normalitas dan Homogenitas

Tests of Normality

	Sampel	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Overrun	1	.262	4	.	.831	4	.171
	2	.295	4	.	.797	4	.096
	3	.317	4	.	.908	4	.474
	4	.302	4	.	.825	4	.154
Kecepatan_Meleleh	1	.214	4	.	.940	4	.654
	2	.215	4	.	.946	4	.689
	3	.254	4	.	.919	4	.529
	4	.287	4	.	.909	4	.480
L	1	.272	4	.	.946	4	.691
	2	.292	4	.	.926	4	.573
	3	.252	4	.	.924	4	.558
	4	.289	4	.	.818	4	.139
a	1	.269	4	.	.867	4	.285
	2	.293	4	.	.791	4	.087
	3	.279	4	.	.941	4	.663
	4	.173	4	.	.988	4	.944
b	1	.328	4	.	.805	4	.112
	2	.297	4	.	.804	4	.109
	3	.236	4	.	.940	4	.653
	4	.199	4	.	.970	4	.843

a. Lilliefors Significance Correction

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Overrun	1.400	3	12	.291
Kecepatan_Meleleh	.339	3	12	.797
L	6.062	3	12	.009
a	5.342	3	12	.014
b	4.536	3	12	.024

7.5.4. Analisis Fisik: Uji *One Way* ANOVA dan Uji Post Hoc (*Duncan*)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Overrun	Between Groups	2.447	3	.816	2.371	.122
	Within Groups	4.128	12	.344		
	Total	6.575	15			
Kecepatan_Meleleh	Between Groups	35.608	3	11.869	613.466	.000
	Within Groups	.232	12	.019		
	Total	35.840	15			
L	Between Groups	3468.231	3	1156.077	1677.424	.000
	Within Groups	8.270	12	.689		
	Total	3476.501	15			
a	Between Groups	4600.278	3	1533.426	4607.102	.000
	Within Groups	3.994	12	.333		
	Total	4604.272	15			
b	Between Groups	2028.736	3	676.245	973.791	.000
	Within Groups	8.333	12	.694		
	Total	2037.069	15			

Overrun

Duncan[a]

Sampel	N	Subset for alpha = 0.05	
		1	2
4	4	41.20275	
1	4	41.67050	41.67050
3	4	41.68325	41.68325
2	4		42.30350
Sig.		.292	.172

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

Kecepatan_Meleleh

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
2	4	21.31000			
3	4		23.39000		
1	4			24.41500	
4	4				25.31750
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

L

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
4	4	48.50750			
3	4		58.43500		
2	4			61.99000	
1	4				88.34000
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

a

Duncan[a]

Sampel	N	Subset for alpha = 0.05			
		1	2	3	4
1	4	-4.74250			
2	4		26.87500		
3	4			34.59000	
4	4				38.27500
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

b

Duncan[a]

Sampel	N	Subset for alpha = 0.05		
		1	2	3
3	4	8.73000		
4	4	8.84250		
2	4		11.21750	
1	4			35.50000
Sig.		.852	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 4.000.

7.5.5. Analisis Sensori: Pengujian *Kruskal Wallis*

Test Statistics[a,b]

	Rasa	Warna	Tekstur	Aroma	Overall
Chi-Square	42.117	23.376	6.788	50.329	41.588
df	4	4	4	4	4
Asymp. Sig.	.000	.000	.148	.000	.000

a. Kruskal Wallis Test

b. Grouping Variable: Sampel

7.5.6. Analisis Sensori: Pengujian *Mann-Whitney*

a. Es Krim Komersial Vs Es Krim Kolang-kaling

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	116.500	299.000	96.500	154.000
Wilcoxon W	581.500	764.000	561.500	619.000
Z	-5.062	-2.297	-5.435	-4.514
Asymp. Sig. (2-tailed)	.000	.022	.000	.000

a. Grouping Variable: Sampel

b. Es Krim Komersial Vs Es Krim Kolang-kaling + Ekstrak Bit 20%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	252.500	393.500	150.000	274.500
Wilcoxon W	717.500	858.500	615.000	739.500
Z	-3.043	-.856	-4.625	-2.685
Asymp. Sig. (2-tailed)	.002	.392	.000	.007

a. Grouping Variable: Sampel

c. Es Krim Komersial Vs Es Krim Kolang-kaling + Ekstrak Bit 40%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	248.500	314.500	208.500	331.500
Wilcoxon W	713.500	779.500	673.500	796.500
Z	-3.111	-2.067	-3.807	-1.835
Asymp. Sig. (2-tailed)	.002	.039	.000	.067

a. Grouping Variable: Sampel

d. Es Krim Komersial Vs Es Krim Kolang-kaling + Ekstrak Bit 60%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	162.500	312.000	115.000	230.000
Wilcoxon W	627.500	777.000	580.000	695.000
Z	-4.393	-2.089	-5.194	-3.376
Asymp. Sig. (2-tailed)	.000	.037	.000	.001

a. Grouping Variable: Sampel

e. Es Krim Kolang-kaling Vs Es Krim Kolang-kaling + Ekstrak Bit 20%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	195.000	339.000	256.000	254.000
Wilcoxon W	660.000	804.000	721.000	719.000
Z	-3.890	-1.685	-2.978	-2.996
Asymp. Sig. (2-tailed)	.000	.092	.003	.003

a. Grouping Variable: Sampel

f. Es Krim Kolang-kaling Vs Es Krim Kolang-kaling + Ekstrak Bit 40%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	226.000	172.500	189.500	70.500
Wilcoxon W	691.000	637.500	654.500	535.500
Z	-3.407	-4.202	-3.960	-5.801
Asymp. Sig. (2-tailed)	.001	.000	.000	.000

a. Grouping Variable: Sampel

g. Es Krim Kolang-kaling Vs Es Krim Kolang-kaling + Ekstrak Bit 60%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	447.500	420.500	448.000	391.500
Wilcoxon W	912.500	885.500	913.000	856.500
Z	-.039	-.451	-.031	-.906
Asymp. Sig. (2-tailed)	.969	.652	.975	.365

a. Grouping Variable: Sampel

h. Es Krim Kolang-kaling + Ekstrak Bit 20% Vs Es Krim Kolang-kaling + Ekstrak Bit 40%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	443.000	258.000	372.000	266.500
Wilcoxon W	908.000	723.000	837.000	731.500
Z	-.107	-2.928	-1.196	-2.834
Asymp. Sig. (2-tailed)	.915	.003	.232	.005

a. Grouping Variable: Sampel

i. Es Krim Kolang-kaling + Ekstrak Bit 20% Vs Es Krim Kolang-kaling + Ekstrak Bit 60%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	230.500	342.500	296.000	347.000
Wilcoxon W	695.500	807.500	761.000	812.000
Z	-3.325	-1.635	-2.352	-1.562
Asymp. Sig. (2-tailed)	.001	.102	.019	.118

a. Grouping Variable: Sampel

j. Es Krim Kolang-kaling + Ekstrak Bit 40% Vs Es Krim Kolang-kaling + Ekstrak Bit 60%

Test Statistics[a]

	Rasa	Warna	Aroma	Overall
Mann-Whitney U	269.500	215.000	247.000	204.500
Wilcoxon W	734.500	680.000	712.000	669.500
Z	-2.746	-3.573	-3.081	-3.738
Asymp. Sig. (2-tailed)	.006	.000	.002	.000

a. Grouping Variable: Sampel

Correlations

		Total_Padatan	Air	Lemak	Protein	Abu	Karbohidrat	Sukrosa	Overrun	Kecepatan_Meleleh
Total_Padatan	Pearson Correlation	1	-.928**	.186	-.455	.243	.700**	-.905**	.161	-.239
	Sig. (2-tailed)		.000	.490	.076	.364	.003	.000	.551	.374
	N	16	16	16	16	16	16	16	16	16
Air	Pearson Correlation	-.928**	1	-.027	.509*	-.288	-.763**	.934**	-.296	.214
	Sig. (2-tailed)	.000		.921	.044	.279	.001	.000	.265	.426
	N	16	16	16	16	16	16	16	16	16
Lemak	Pearson Correlation	.186	-.027	1	.149	-.105	-.492	.058	-.111	-.032
	Sig. (2-tailed)	.490	.921		.582	.698	.053	.830	.683	.907
	N	16	16	16	16	16	16	16	16	16
Protein	Pearson Correlation	-.455	.509*	.149	1	.134	-.751**	.606*	-.699**	.718**
	Sig. (2-tailed)	.076	.044	.582		.620	.001	.013	.003	.002
	N	16	16	16	16	16	16	16	16	16
Abu	Pearson Correlation	.243	-.288	-.105	.134	1	.142	-.283	-.424	.301
	Sig. (2-tailed)	.364	.279	.698	.620		.600	.289	.102	.257
	N	16	16	16	16	16	16	16	16	16
Karbohidrat	Pearson Correlation	.700**	-.763**	-.492	-.751**	.142	1	-.831**	.434	-.413
	Sig. (2-tailed)	.003	.001	.053	.001	.600		.000	.093	.112
	N	16	16	16	16	16	16	16	16	16
Sukrosa	Pearson Correlation	-.905**	.934**	.058	.606*	-.283	-.831**	1	-.320	.262
	Sig. (2-tailed)	.000	.000	.830	.013	.289	.000		.227	.327
	N	16	16	16	16	16	16	16	16	16
Overrun	Pearson Correlation	.161	-.296	-.111	-.699**	-.424	.434	-.320	1	-.595*
	Sig. (2-tailed)	.551	.265	.683	.003	.102	.093	.227		.015
	N	16	16	16	16	16	16	16	16	16
Kecepatan_Meleleh	Pearson Correlation	-.239	.214	-.032	.718**	.301	-.413	.262	-.595*	1
	Sig. (2-tailed)	.374	.426	.907	.002	.257	.112	.327	.015	
	N	16	16	16	16	16	16	16	16	16

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

PLAGIARISM CHECK.ORG

7.72% PLAGIARISM APPROXIMATELY

Report #11422138

PENDAHULUANLatar Belakang PenelitianKolang-kaling adalah salah satu produk hasil olahan yang berasal dari perebusan endosperm biji buah aren (Arenga pinnata Merr.) yang masih muda (Fatah & Yusuf, 2004 dalam Harly, 2016). Usia panen kolang-kaling muda berkisar antara 8-12 bulan, pertengahan matang berkisar antara 16-18 bulan, sedangkan tua berkisar antara 22-24 bulan yang dihitung sejak penyerbukan (Torio et al., 2006 dalam Sarmi, 2016). Jika buah aren yang diolah terlalu tua maka akan mempengaruhi tekstur kolang-kaling menjadi terlalu keras. Kolang-kaling yang telah mengalami pemasakan, akan berubah warna menjadi putih kekuningan dan teksturnya menjadi lunak serta kenyal (Saragih, 2012 dalam Harly, 2016). Namun, hal ini tidak berlaku pada kolang-kaling yang telah tua karena teksturnya akan tetap keras walaupun telah terjadi pemasakan sehingga biasanya kolang-kaling tua tidak dijual maupun diolah menjadi produk olahan kolang-kaling. Menurut Badan Statistik Indonesia (2015) dalam Pangaribuan (2019), jumlah produksi kolang-kaling sebanyak 2,38 ton pada tahun 2015 padahal luas lahan tanaman aren di Indonesia mencapai 99.251.859 ha yang menunjukkan bahwa tingkat produksi kolang-kaling sangat rendah walaupun buah aren yang dihasilkan sangat banyak (BPS, 2013 dalam Pangaribuan 2019). Salah satu faktor yang menjadi penyebab rendahnya tingkat